

REMARKS

Claims 1-32 were pending and claims 1-32 stand rejected. By virtue of this response, claims 10-12 and 28 have been cancelled, claims 1, 13, 18, and 26 have been amended, and new claims 33 and 34 have been added. Accordingly, claims 1-9 and 13-27 and 29-34 are currently under consideration. The amendment and new claims are fully supported at least by the claims as originally presented; accordingly, no new matter has been added.

For the Examiner's convenience, Applicants' remarks are presented in the same order in which they were raised in the Office Action.

Claim Rejections under 35 USC §102

A. Claims 1-3, 6, 8, 10, 12, 16, 18-20, 24, 26, and 29 stand rejected under 35 U.S.C. 102(b) as being anticipated by Tsutsumi (Publication No. U.S. 2002/0031290 A1).

Claims 1 and 18

Applicants have amended claims 1 and 18 to include features similar to original claims 12 and 13. Specifically, claims 1 and 18 now recite that the sensor comprises "a sensor for detecting the light from the reference location, wherein the sensor comprises a position sensitive diode device operable to generate two signals, a first signal associated with a location of an intensity centroid along one direction and a second signal associated with a location of an intensity centroid along a second direction, the second direction orthogonal to the first direction."

These features are not disclosed or suggested by Tsutsumi, nor were these features alleged to be disclosed or suggested by Tsutsumi in the Office Action (note that claim 13 was not rejected by Tsutsumi). Accordingly, the rejection to claims 1 and 18 (and all claims depending therefrom) must be withdrawn.

Claim 26

Applicants have amended claim 26 to include features similar to, but not identical, to original claim 28. Specifically, claim 26 now recites detecting a deflection angle and a direction of the deflection angle of the focused beam of light from the optical article at multiple scan positions, wherein “the focused beam of light is focused during a scan to at least two different positions along a direction parallel to the path of the focused beam of light for a given position in an x-dimension and y-dimension, the x-dimension and y-dimension orthogonal to the path of the focused beam of light.” Accordingly, claim 26 now recites that the scan includes a scan of multiple scan positions along a direction parallel to the focused beam, e.g., in a z-dimension or into the scanned article for a given x and y position.

These features are not disclosed or suggested by Tsutsumi, nor were the features of original claim 28 alleged to be disclosed or suggested by Tsutsumi in the Office Action (note that claim 28 was not rejected by Tsutsumi). Accordingly, the rejection to claim 28 (and all claims depending therefrom) must be withdrawn.

B. Claims 1-13, 17-23, 26-28, and 30-32 stand rejected under 35 U.S.C. 102(b) as being anticipated by Opsal (U.S. Patent No. 5,042,952).

Claims 1 and 18

Applicants have amended claims 1 and 18 to include features of original claims 12 and 13. Specifically, claims 1 and 18 now recite that the sensor comprises “a sensor for detecting the light from the reference location, wherein the sensor comprises a position sensitive diode device operable to generate two signals, a first signal associated with a location of an intensity centroid along one direction and a second signal associated with a location of an intensity centroid along a second direction, the second direction orthogonal to the first direction.”

These features are not anticipated by Opsal, nor were these features alleged to be anticipated by Opsal in the Office Action. It is noted, however, that claim 13 was rejected on page

10 of the Office Action as unpatentable over Opsal in view of Fanton (U.S. Patent No. 5,181,080); that rejection is addressed under this heading.

Applicants submit that neither Opsal nor Fanton disclose or suggest a position sensitive diode as recited (and asserted by the Examiner in the Office Action), and therefore the combination of references fails to disclose or suggest the features of the present claims. The Examiner appears to be equating a position sensitive diode to a segmented photodetector, which is incorrect. A position sensitive diode provides signals associated with an intensity centroid of an incident beam of light, and is clearly distinguished from a photodetector having two or four segmented sections as described in the present application:

[0031] In one example, sensor 108 includes a segmented photodetector having two or more segmented sections, e.g., four sections. Each section of the segmented photodetector produces a signal associated with the intensity of light incident thereon allowing a determination of the angle of the probe beam 106 emerging from optical article 105. In one example, an On-Trak PSM2-4Q quadrant detector, manufactured and sold by On-Trak Photonics, Inc., may be used. In another example, sensor 108 may include a position sensitive diode device, wherein the device outputs two signals which allow for the determination of positional information of the centroid of light energy incident thereon. In one example, an On-Trak PSM2-4 position sensitive diode, manufactured and sold by On-Trak Photonics, Inc., may be used. A first signal from a position sensitive diode device provides information regarding the position of a light intensity centroid along the x-axis of the sensor, and the second signal provides information regarding the position of a light intensity centroid along the y-axis of the sensor, where the centroid averages position weighted by intensity. Those of ordinary skill in the art will recognize that various other optical sensors not specifically mentioned may be used. (Emphasis added).

Accordingly, a position sensitive device outputs two signals associated with a light intensity centroid along each axes. In contrast to a position sensitive device as recited, a segmented photodetector typically outputs as many signals as there are segments, each signal indicating the intensity received for a particular segment of the device, however, such signals are not indicative of a light intensity centroid along axes of the detector.

The Examiner concedes that Opsal fails to disclose a sensor as recited by original claim 13 and relies on detector 40 of Fanton. Detector 40, however, is merely a quadrant photodetector,

which has been clearly distinguished by the present application from a position sensitive diode. As described in Fanton, “[e]ach quadrant will generate an output signal proportional to the magnitude of the power of [a] probe beam striking the quadrant.” (Col. 4, lines 39-43; Fig. 2.) Thus, detector 40 outputs four signals associated with an intensity of light received at the particular quadrant, but does not output signals associated with intensity centroids along two axes as recited.

Accordingly, for at least these reasons, the combination of Opsal and Fanton fail to disclose or suggest the features of claims 1 and 18, and the rejection must be withdrawn.

Claim 26

Applicants have amended claim 26 to include features similar to, but not identical to, claim 28. Specifically, claim 26 now recites detecting a deflection angle and a direction of the deflection angle of the focused beam of light from the optical article at multiple scan positions, wherein “the focused beam of light is focused during a scan to at least two different positions along an optical axis of the focused beam of light.” Accordingly, claim 26 now recites that the scan includes a scan of multiple positions along the optical axis, e.g., at two positions in a z-dimension or into the scanned article for a given x, y position.

Opsal fails to disclose or suggest the recited features. The Examiner states on Page 8 of the final Office Action that Opsal discloses a method wherein the scan is performed along a third dimension (the Examiner referencing column 16, lines 20-24 thereof), and further states on page 11 that because the probe beam measures characteristics of a sample at locations having different elevations, the Examiner maintains that Opsal discloses scanning in a third dimension. The portion of Opsal recites that “3-dimensional effects should be included. As described by [citation omitted] this may be accomplished by a treatment based on a linear superposition of 1-dimensional solutions.” (Col. 16, lines 20-24; further, Opsal specifically specifies a two-axis stage at column 7, line 67 and shown in Fig. 1.)

These portions appear to merely describe that 3-dimensional effects may be obtained from 1-dimensional solutions, but fail to disclose or suggest scanning at a multiple locations along

the optical axis of the focused beam of light as recited by claim 26. For example, even if Opsal discloses or suggest focusing the beam of light to accommodate for differences in the surface of an article, there is no disclosure or suggestion of focusing the beam of light at multiple locations along the optical path of the focused beam of light when measuring an optical article, let alone, where one of the scan positions is focused within the optical article.

Accordingly, for at least these reasons, the rejection to claim 26 and claims depending therefrom must be withdrawn.

Claim Rejections under 35 USC §103

A. Claims 14-15, and 25 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over Tsutsumi (Publication No. U.S. 2002/0031290 A1) in view of Migeotte (U.S. Patent No. 3,688,235).

Claims 14, 15, and 25 depend ultimately from independent claims 1 and 18 and are allowable over Tsutsumi for at least similar reasons stated above. The addition of Migeotte fails to cure the deficiencies of Tsutsumi, nor is Migeotte alleged to. Accordingly, Applicants request the rejection be withdrawn.

Further, with regard to claims 14, 15, and 25, which relate generally to the use of confocal filters and confocal imaging, Applicants disagree with the Examiner's assertion that Migeotte discloses confocal filters and/or confocally imaging the light after the light interacts with the optical article. The Examiner states under the "Response to Arguments" heading (pages 9 and 10 of the Office Action) that "confocal imaging of the light is performed by detector 24 and 28," and that "confocal filters are disclosed in col. 6, lines 50-56, where screens (20) and (26) shown in Figs. 2a and 3a, may use light filters in place of mask (8)."

Applicants disagree – Migeotte simply does not disclose a confocal filter to facilitate confocal imaging. Migeotte clearly describes the disclosed system and method as forming a "sharp image of the mask 8 [] focused on the central area 22 of the screen 20." (Migeotte, 5:24-26; 8:42-

47.) Thus, the disclosed system and method of Migeotte does not focus the beam to a focal point disposed at a hole of a pin-hole filter as would be the case for confocal imaging. For example, the system of Migeotte would need the rays which cross at focus 11 to be re-focused by a lens such that they cross again at some point x (where point x would be an image of point 11, or 11 and x would constitute "conjugate points") with a pinhole filter disposed around x. Accordingly, Migeotte cannot be confocally imaging the light because the system and method is described as focusing an image of the disc/mask 8 onto screen 20.

Furthermore, the "confocal filters" identified by the Examiner and described at col. 6, lines 50-56 are clearly described as "a light filter, e.g., a colored or Polaroid filter," (emphasis added) for the purpose of replacing the mask (8, 8', 8''), which is disposed in the light beam path prior to passing through screen 12. Migeotte provides no disclosure that would suggest such a colored "light filter" is a confocal filter, e.g., including a pin-hole filter disposed at a conjugate focus. Accordingly, Migeotte does not disclose or suggest a confocal filter, and further, detectors 24 and 28 cannot be said to be confocally imaging the received light (e.g., as recited by claim 24).

Accordingly, Migeotte fails to disclose or suggest the use of a confocal filter or confocal imaging and the rejection to claims 14, 15, and 25 should be withdrawn for at least these additional reasons.

B. Claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Opsal (U.S. Patent No. 5,042,952) in view of Fanton (U.S. Patent No. 5,181,080).

Claim 13 is cancelled herein and features similar to those of original claims 12 and 13 included with claim 1. The rejection to the features of original claim 13 are addressed above with respect to the rejection to claim 1 over Opsal. As provided above, the combination of Opsal and Fanton fail to disclose or suggest a position sensitive diode device operable to generate two signals to generate two signals, a first signal associated with a location of an intensity centroid along one direction and a second signal associated with a location of an intensity centroid along a second direction, the second direction orthogonal to the first direction. In particular, the combination at

best discloses the use of a quadrant photodetector, which has been clearly distinguished from a position sensitive diode.

Accordingly, the rejection must be withdrawn.

New Claims

Applicants have added new claims 33 and 34 to recite certain features of the sensor of claim 26. The claims are fully supported by the claims as originally presented and no new matter has been added.

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 495812005700. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Dated: December 14, 2007

Respectfully submitted,

By Electronic Signature /Christopher B. Eide/
Christopher B. Eide

Registration No.: 48,375
MORRISON & FOERSTER LLP
755 Page Mill Road
Palo Alto, California 94304-1018
(650) 813-5720